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ABSTRACT

The presuppositions that favor firsthand experience over secondhand information, as pertaining to learning and education, are questioned. It is noted that, when education and firsthand experience are described as if equivalent, a presumption is made that a commonsense theory of knowledge and mind is valid. Research on the social psychology of judgment is used to identify faulty inferences that frequently result from learning by firsthand experience. These pitfalls are illustrated in a discussion of learning to teach. In considering how firsthand experience can close avenues to conceptual and social change, it is pointed out that firsthand experience often fallaciously confounds whatever happens in life with necessity. The example is given of vocational education, in which learning by doing is advocated as a means of fitting students into the real world, thereby curbing their aspirations. It is argued that ideas based on secondhand information are more likely than firsthand experience to manifest both the real and the possible, and it is concluded that education gives access to thoughts and theories that are beyond the scope of firsthand experience. (JD)

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EDUCATION: THE OVERCOMING OF EXPERIENCE

Margret Buchmann and John Schwille

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Abstract

"Experience is the best teacher." In U.S. education, there is a common belief in the educative value of firsthand experience. Teachers, for example, claim to have learned from classroom experience most of what they know about teaching. Children, too, are seen as learning best when firsthand experience is the basis for what they are taught. This essay questions the presuppositions that favor firsthand experience. First, the authors look at what is entailed when education and firsthand experience are described as if equivalent. Beliefs in such an equivalence presuppose a commonsense theory of knowledge and mind which philosophers of science have found to be inadequate. Second, the authors use research on the social psychology of judgment to identify faulty inferences that frequently result from learning by firsthand experience. These pitfalls are illustrated in a discussion of learning to teach. Third, the authors consider how firsthand experience can close avenues to conceptual and social change. For example, to learn from firsthand experience is often to confound whatever happens with necessity. Thus, in the history of vocational education, learning by doing was advocated as a means of fitting students to the real world, thereby curbing their aspirations. Finally, the authors argue that ideas based on secondhand information are more likely than firsthand experience to manifest both the real and the possible. Education gives access to thoughts and theories that are beyond the scope of firsthand experience.

EDUCATION: THE OVERCOMING OF EXPERIENCE

Margret Buchmann and John Schwille[1]

"Experience is the best teacher." In U.S. education, there is a common belief in the educative value of firsthand experience, of "being there," and "doing it," and "seeing for oneself." Teachers claim that they have learned from classroom experience most of what they know about teaching. In deference to their belief, preservice education gives more and more time to classroom experience, while inservice programs stress teachers' sharing their experiences with one another. Teachers in turn are advised to build on the firsthand experiences of children. There is a fear that, without such a foundation, learners will have neither interest nor understanding.

Firsthand experience is trusted implicitly as both the means and content of education. It is "down to earth," personal, sensory and practical. Ideas encountered in books are pale in contrast. Compared to life as a school of hard knocks, the school of hard books seems soft and ineffective. Immersion in the "real world" teaches people to think and act rightly. Those who want students to know the world of work firsthand often do not challenge limits set by occupations as they presently are.

In this essay, we question the presumptions that favor firsthand experience. Our argument has four parts. First, we look at the language of education as a language of experience with presuppositions, entailments, and functions that stem from this view. Next, we analyze the limits and fallacies of learning from firsthand experience. Thirdly, we consider how firsthand experience can close avenues to conceptual and social change.

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As specific examples we discuss in these two sections learning to teach and career education. Finally, we argue that, in general, ideas can give better access than firsthand experience to the real world and to the realm of the possible.

Education as the Voice of Experience

Historians of education have argued both that the American language of education is a language of experience, and that the belief in the educative value of experience has not been subjected to critical analysis (see Clifford, 1975). As Eisele (1980) points out, we "say things like . . . 'you have to learn from experience,' 'that was a real learning experience'" (p. 32). People feel that they learn by doing, and that "practice makes perfect." Experience is the best teacher, so "live and learn," and "let experience be your guide."

Colloquial reason thus casts experience as teacher, school, and lesson, and as the means by which education and its perfection are accomplished. The connection between the concepts of education and experience appears to be an analogical fusion--the essence of metaphor (Lakoff & Johnson, 1980; Perelman & Olbrechts-Tyteca, 1971).

Firsthand Experience: From Metaphor to Theory and Action

We think, talk, act, and live under the guidance of metaphors. Understanding things in terms of each other, we fuse them in action. Metaphors prescribe and commend; they "sanction actions, justify inferences, and help us set goals" (Lakoff & Johnson, 1980, p. 483). Metaphors entail more than they say; their function in thought and action depends on an evocative, binding force.

Thus, for example, the analogical fusion of education and experience implies and imposes a theory of learning and of the relationship of mind to reality. These theories are anchored in the commonsense account of learning about "the real world." This anchoring has a paradoxical consequence. For, the tenets of common sense, according to Geertz (1975), are not presented as postulates at all. Instead, they

> are conflated into comprising one large realm of the given and undeniable, a catalog of the in-the-grain-of nature realities so peremptory as to force themselves upon any mind sufficiently unclouded to receive them. Yet this is clearly not so. (p. 7)

In short, the matter-of-fact pretensions of common sense tend to conceal problematic rhetorical and theoretical underpinnings.[2] The very characterization as theory is inimical to common sense; it presents itself as reality pure and simple.

What is taken for granted in language becomes, quite literally, second nature. The integration of metaphorical expressions into ways of speaking and acting masks the fact that these expressions make a case whose merits need to be examined. To understand the fusion of education and firsthand experience and its effects on what is taught and learned in schools, it is necessary to examine the theory of knowledge and mind on which this analogical fusion depends, and on which empirical and prescriptive claims about the educative value of firsthand experience rely.

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[2] Metaphors are theory-laden. In fact, it is difficult to make a distinction between metaphors and theories (Scheffler, 1960, 1979; Simon & Newell, 1956). Discourse that is metaphorically structured by expressions which are part of common parlance has an in-built persuasive force (Perelman & Olbrechts-Tyteca, 1971). The analogical material is often not seen as metaphorical any more; the metaphor has become dormant. Its assumptions and entailments have been assimilated into the communal stock of reason and social practices. Thus the "exploratory crossing of categories" may take on the appearance of a "report on isomorphisms" (see Scheffler, 1979, p. 129) that can rely, to some extent, on matters of fact--created under the guidance of metaphors.

The Bucket Theory of Mind

Common sense speaks to most things that matter, hence about knowledge and mind. While it may be reasonable to take common sense as a starting point for philosophical or scientific inquiry, it does not follow that common sense is equally sound on all questions, or that it cannot be wrong-headed. One would predict that common sense would not excel at reflection on the grounds of beliefs and the adequacy of knowledge claims. The reason is that the very style of common sense spells an implicit endorsement of a certain theory of knowledge and mind that does not invite self-conscious probing.

The commonsense theory of knowledge is straightforward. In the words of Popper (1975), "if you or I wish to know something . . . we have to open our eyes and look around. And we have to raise our ears and listen to noises, and especially those made by other people" (p. 60). Sense experience is the central concept of the commonsense theory of knowledge. Metaphorically, firsthand experience stands for all that comes to the mind through the senses. The mind is visualized as a container to be filled by whatever comes from the different sense organs. Popper calls this "the bucket theory of mind;" for Locke it is the "*tabula rasa*" or an empty slate.

In this view, what comes to mind through the senses can be relied on as objectively true: It is directly apprehended and in no way interfered with. Immediate experience therefore cannot be false; to question it makes no sense. Error can be remedied by taking another hard look at the facts, the "given" that is external to mind. The mind is seen as an impassive and efficient instrument that registers, adds up, and digests

incoming data.[3]

The commonsense theory of knowledge turns on the notion of immediate experience. But, natural scientists today regard even sense organs as (genetically) impregnated with anticipatory theories. In the philosophy of science, there are rival perspectives to the empiricism inspired by the commonsense theory of knowledge. For example, the work of Popper, Lakatos, and Feyerabend stresses the indirect, tentative character of knowledge and dismisses the idea of a simple sensory foundation.

However, many beliefs and practices in education presuppose the commonsense theory of knowledge and the mind. Such presuppositions also inspire interpretations of the work of Dewey and Piaget. Educational applications of these theories tend to emphasize the practical and concrete, in the expectation that conceptual frameworks will be acquired

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[3]This machine-like conception of the mind has been recently reinforced through computer science. A speech by the notable computer scientist Weizenbaum has been paraphrased by Bohm (1981) as follows: "It was as though one aspect of the human mind, the computer aspect, was externalized and embodied in a machine which was then taken as the model for the entire human mind, which is then viewed as itself only a computer--and, at that, an inferior computer in comparison with an increasingly sophisticated, silicon-based computer technology. This reduction of the human mind to the machine, Weizenbaum noted, had long been immanent in Western thinking, but the computer gave it a concrete embodiment that to many people has become utterly convincing" (p. 521). This is an interesting example of a technological application of science reinforcing commonsense theories of knowledge and the mind.

"naturally" through an immersion in practical problems.[4]

The commonsense theory of knowledge assumes that subjective experience is a sufficient foundation for claiming that we know something. Pushed to its logical conclusion, this theory can lead to relativism, the absence of interpersonal, objective criteria for judging the validity of knowledge claims. The dogma of subjective certainty is closely associated with epistemological nihilism, or the counter-intuitive notion that we cannot know anything. Epistemological objectivism likewise takes firsthand experience as a starting point; it focuses, however, on the sensory and descriptive rather than the personal element in sense experience. As indicated earlier, the assumption of the self-sufficiency of immediate experience--on which both epistemological subjectivism and objectivism depend--is faulty. Common sense, which pretends to realism, leaves one stranded in extreme objectivist or subjectivist positions. Critically examined, it refutes itself.

The central educational thesis of the commonsense theory of knowledge is that we learn most, if not all, of what we learn in a reliable fashion through sense experience. The analogical fusion of education and experience, supported by the commonsense theory of knowledge and mind, has *entailments*

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[4]This view is taken by Duckworth (1979) in an article about the educational significance of Piaget's cognitive psychology. She concludes that, "practical situations, which are the ones that correspond most to children's natural activity, are not only sufficient, but are also the best kinds of learning situations" (p. 311). However, the concept of logical possibility, distinctive for formal thought is, in the words of Inhelder and Piaget (1958), no mere "extension of an empirical situation or of actions actually performed" (p. 251). Instead, formal thought separates the real from the possible: "the given facts [are conceived] as that sector of a possible set of transformations that have actually come about" (p. 251).

In an analysis of the reception and institutionalization of Dewey's thought in education, Schwab (1959) writes that, "'To learn by doing' was neither to learn only by doing nor to learn only how to do. Doing was to go hand in hand with reading, reflecting, and remembering" (p. 158). However, Vandenberg (1980) argues that Dewey's philosophy of education is a philosophy of educational *experience* that stands in opposition to formal academic education.

regarding the goals of education, the methods of effective instruction, as well as the social adaptation of young people, especially those with working-class origins. But it is a question whether firsthand experience is as good a teacher as the commonsense theory of knowledge assumes.

If Seeing is Believing, Gullibility Is The Result

What do people learn from firsthand experience? Is what they are learning appropriate and desirable? In this section we describe traps inherent to learning from firsthand experience, traps that lead people to untenable conclusions and reduce individual and collective control over the future.

Firsthand Experience: What Does it Prove?

Sense experience can be misleading. Consider the following examples by Brophy (Note 1):

> The sun seems to move around a stationary earth. Except when the wind is blowing, air seems to be empty nothingness--a vacuum. When standing still, we feel voluntarily motionless on stationary ground--there is no sense that we are spinning at 1000 miles per hour, held in place by a balance of powerful forces. (p. 28)

Hard facts and firsthand experience go their separate ways in these instances. Sight and sound can convey misinformation. One may feel that sensory evidence is compelling. The experience of being compelled, however, does not prove anything. Apt explanations can fail to persuade, while persuasive explanations may be riddled by logical and evidential shortcomings. In the words of John Stuart Mill (1843/1941), "evidence is not that which the mind does or must yield to, but that

which it ought to yield to, namely, that, by yielding to which, its belief is kept conformable to fact" (p. 370, emphasis added).[5]

Research in the psychology of judgment, as summarized by Nisbett and Ross (1980), shows that learning from firsthand experience is not the same as "sticking to the facts." Ordinary judgment relies on strategies that reduce complex tasks of inference to simpler operations. Many of these commonly used heuristics are not trustworthy.

Firsthand experience and problems of inference. For example, Tversky and Kahneman (1973) have described the *availability heuristic*. The relative availability of objects or events in memory tends to influence judgments about their relative frequency, plausibility, and causal efficacy. Much of what is remembered readily has been experienced firsthand. But the firsthand experiences of individuals are necessarily restricted in number by the length of any given life, and systematically influenced in kind by the location of people in the social system. The selection of a person's firsthand experiences is unlikely to be a controlled probability process in the sense of scientific sampling. Firsthand experience is not a suitable means of sampling from an environment that is variable; it is an unreliable basis for making inferences about the real world.

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[5] Of course, this is begging the question, for the problem is to determine just what the facts are. But, as Campbell (1982) also stresses, there is a large difference between acknowledging, for instance, the existence of multiple perspectives and giving up the quest for knowledge that is objective in some sense. Based on a concept of a "third world," proposed first by the philosopher of logic Gottlob Frege, Popper (1975) has argued for objective knowledge in terms of theories that are essentially permanent across individuals and generations. (See also our final section below.)

Nisbett and Ross (1980) exemplify the inferential shortcomings associated with the availability heuristic by the hypothetical case of a pollster who asks people to estimate the current rate of unemployment. Unemployed respondents will tend to overestimate the rate of unemployment, while people who are currently employed are liable to underestimate it. The bias in subjective availability can be traced to sampling bias.

> The reasons for such a sampling bias are hardly mysterious: The unemployed individual is likely to share the neighborhood, socioeconomic background, and occupation of other jobless individuals. He also is likely to encounter other unemployed people in such everyday endeavors as job-hunting, visiting employment agencies, collecting unemployment benefits, and shopping at stores offering cut-rate prices or easy credit. . . . Thus to the extent that the unemployed person relies upon the sample generated by his personal experience, he will be misled about the commonness of unemployment. In the same manner, employed people, who are apt to live, work, and shop near one another, are apt to err in the opposite direction. (p. 20)

To be valid, the availability heuristic must presuppose that the availability of acts and events in memory is determined by a mechanism that keeps track of their frequency and causal efficacy. But salience in memory has often little to do with the evidential or probative value of information. Take for example, the *vividness criterion*, or the influence of the sensory, cognitive, and affective salience of data on the weighting of evidence. The probative value of evidence is not necessarily related to the emotional interest it may have for the person in whose mind it is lodged. Similarly, the degree to which evidence is concrete and imagery-provoking is no predictor of sound conclusions.

Most of the factors that contribute to the vividness of information are factors that characterize firsthand experience. Firsthand experience is close to us, concrete, and interesting simply because what happened did happen to ourselves or to people we know. It prompts sensory images,

hopes, and desires. But, what makes an experience vivid may be irrelevant for the purposes of inference and judgment, and emotions have no inherent connection to defensible thought.

The interference of firsthand experience with education. The availability heuristic and the vividness criterion will not invariably determine what is learned from firsthand experience. Nevertheless, these common strategies of judgment do suggest that firsthand experience will often prejudice attempts at education based on better evidence or reasoning.

In the hypothetical case discussed above, survey information in the form of employment statistics could be used to estimate the rate of unemployment. Contextual factors and other possible sources of unreliability could have been considered to adjust any initial subjective guesses. However, experimental evidence shows that people are generally swayed by availability and not much disposed to adjust for the biases of firsthand experience. As Nisbett and Ross (1980) point out, common parlance attests to the importance of firsthand experience in evidential weighting:

> The principle that information should be weighted more heavily if it is obtained firsthand is often explicitly acknowledged. . . . People often say "I was there," or "I saw it myself," in order to enhance the credibility of their assertions. Doubters are urged to go see for themselves. (p. 50)

The work of teachers and the experiences of student teachers provide further illustrations. When teachers say, "I tried individualized instruction and it does not work," or, "I have read that book to fifth-grade children and they are not interested," they rely on the availability heuristic. Classroom experiences can be quite vivid. For instance, an excitable child may calm down greatly after being struck with a ruler. Moral and

organizational ramifications, the teacher's feelings, and the child's reactions can make this event very salient. Little can be learned from it, however, about the effectiveness of corporal punishment in general or for hyperactive children in particular.

Imagine what can be learned from firsthand experience in student teaching: that punishment works, that punishment doesn't work; that silence is an indication of busy minds and student engagement, that silence is an indication of irrelevant and ineffective teaching; that cultural difference is deprivation, that cultural difference is desirable; that whole-group instruction is more effective than individualized instruction, that whole-group instruction is less effective than individualized instruction; and so on.

In principle, no one need rely on the vividness and biased availability of data based on firsthand experience. Research information in the form of anthropological descriptions or experimental evidence from psychology could inform and correct beliefs founded on firsthand experience. But another effect of the vividness criterion--unjustified scepticism of secondhand information coded in texts or summarized by figures in tables--lessens the likelihood of such adjustments. The work of Tversky and Kahneman (1974) on cognitive anchoring indicates that once a judgment has been made, people are not inclined to consider further evidence, alternative modes of reasoning, or logical and evidential challenges. As methods of first choice, judgment heuristics associated with firsthand experience thus can become cognitive traps that prevent education.

Platt (1973) has analyzed traps of firsthand experience from the perspective of reinforcement theory. People tend to get trapped in behaviors that have short-term rewards, even when these behaviors are liable to have negative consequences in the long run. Behavioral traps also occur when something initially rewarding becomes less so over time and is punishing in the end. Firsthand experience in itself does not provide a long-term view of its consequences; what is required for such a view is an exercise of the imagination. Nor can one be enlightened by others without overcoming judgment biases due to the affective salience, concreteness, and availability in memory of rewarding personal experiences.

Thus, cognitive traps interact with behavioral traps. The impact of firsthand experience over the course of the teacher's career illustrates this clearly. After their first experiences "on the other side of the desk" in student teaching, many future teachers act as if maintaining an orderly and busy classroom amounts to good teaching. Their conception of their work gets determined by what they first succeed in. What typically helps teachers survive in their beginning years (i.e., the activation of models of teaching acquired in the lengthy course of their own schooling)[6] may be irrelevant for purposes of getting better at teaching. It is here that ideas about what is possible and desirable could help. But the rewards of survival are self-evident and reinforce associated behaviors, derived from firsthand experience to begin with. The relative isolation of teachers throughout their career makes cog-

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[6]This is what Lortie (1975) calls "the apprenticeship of observation"--yet another effect of firsthand experience in learning to teach, and one that distinguishes the professional socialization of teachers from that of doctors and lawyers.

nitive and behavioral traps associated with firsthand experience particularly effective, often beyond the point of diminishing returns.

In view of the experimental and anecdotal evidence on the problematic role of firsthand experience in judgment, Nisbett and Ross (1980) are surprised that there are so few prescriptions for protection against being overly influenced by concrete, sensory data. They even invent a few caveats for this purpose: "Just because it's punchy doesn't mean it's important." "Yes it's interesting, but what does it prove?" (p. 61). In contrast, there are many sayings to protect us against secondhand data: "Don't believe everything you read." "You can prove anything with statistics." Both phenomena--scarcity of homilies about the inferential pitfalls of firsthand experience and the diversity of cautionary statements regarding secondhand information--signal an implicit endorsement of the commonsense theory of knowledge with its assumptions of immediate experience and sense certainty.

In everyday judgment and behavior, strategies of judgment and evidential weighting are neither devised nor employed deliberately. Here, one might think, is a mission for educators: to challenge the implicit trust in firsthand experience and clarify the problematic assumptions of the commonsense theory of knowledge and mind. But the very language of education, as a voice of (firsthand) experience, gets in the way of this endeavor. Indeed, educators are long on homilies about the value of firsthand experience, short on inferential and evidential homilies, and themselves prey to the mystique of firsthand experience. This mystique has not only cognitive, but also political and social consequences.

Firsthand Experience, Enemy of Freedom?

Firsthand experience is often viewed as a process in which one comes to terms with the "real world," the world of practiced performers into which the novice is initiated. In this view of learning, the role of imagination is limited and that of imitation paramount. Learning from experience, from this vantage point, is learning to adhere to practices and standards that remain unchallenged. Thus, experience in teaching, as Waller (1932/1961) writes in his classic book on the sociology of teaching, "disciplines the creative impulse out of many" (p. 391). When young people are told, "it will be a good experience for you," the expectation usually is that they will come out of it chastened.

Aspiration requires imagination and presupposes understanding that the limits of firsthand experience are not the limits of what is possible. Actuality and imagination stand in a relation that Bourdieu (1971) calls the "paradox of finitude:"

> The individual who attains an immediate, concrete understanding of the familiar world, of the native atmosphere in which and for which he has been brought up, is thereby deprived of the possibility of appropriating immediately and fully the world that lies outside. (p. 205)

Experience limits social and political thought. In the words of Whitehead (1933), "every occasion of actuality is in its own nature finite . . . [it] necessarily excludes the unbounded welter of contrary possibilities. . . . This doctrine is--or should be--a commonplace of political philosophy" (p. 356).

To transcend the paradox of finitude, people invoke abstract categories derived from collective experience. Understanding one's experience requires access to the behavior, thoughts, and knowledge of many individuals whom one

cannot personally know. If such knowledge cannot be mustered or if categories are taken on faith, people trying to learn from their experience are in fact subject to the manipulation of others. These need not be malevolent, but taking their disinterestedness, benevolence, or wisdom on faith is unwarranted. As Lipsky (1980) points out:

> Citizens in general and poor people in particular will resign themselves to inferior levels of service if they have nothing with which to compare their experiences and have no basis for thinking that they deserve any better. Their frame of reference, if any, is experiential. But the isolation of most clients from each other makes it difficult to interpret experiences effectively and makes clients highly subject to street-level bureaucrats' definition of their situation. (p. 53)

Clients of public bureaucracies usually do not receive information that allows them to judge the way they are treated, compare their own treatment with that of others, or with that of clients in other years and at comparable agencies. In the realm of social and political perception, the validity of inference is also a matter of the degree to which purely experiential frames of reference can be overcome or adjusted for their shortcomings.

Karl Marx hoped that increasing hardships would act to break the barriers of isolation among the poor and enlarge their scope of vision. He expected that objective circumstances, if only oppressive enough, would lead to an understanding of oppression and to revolutionary action. But, after analyzing the events that led to the coup d'état of Louis Bonaparte, Marx (1869/1967) concluded that poverty and isolation among the small-holding peasants in France made them in fact, a conservative force. The peasants were restricted by their mode of life. The small holding, in the words of Marx, "admits of no division of labor in its cultivation, no application of science and, therefore, no diversity of development, no variety of talent, no wealth of social relationships"

(p. 213). This explanation might be seen as a variant of the notion that the cultural backgrounds of low income or minority children are impoverished.[7] However, what we are saying can be seen as a cultural deprivation hypothesis in a different and more general sense. By the biological and structural limitations of firsthand experience, everyone is deprived of knowledge that is commonplace to other groups and other times. Whatever one's origin, a restrictive reality born of firsthand experience will not foster an enabling and transforming vision of action--although ideas can.

The schooling of followers. As Willis (1977) has shown, disaffected working class boys end up accepting--almost embracing--what they recognize as their place in society. The "lads" enact their skeptic stance toward the social order as a rejection of the school and intellectual activity in general. They celebrate manual labor as a test of manhood. It gives evidence of their superiority to women; to be a man is to accept the physical demands of industrial work as inevitable. As presented in careers teaching, the British equivalent of career education, the organization of work in industry appears as timeless as the class distinction between manual and mental labor. The absolutism of this perception rests on a conflation of things as they are with things as they will and must be. It is the absolutism of common sense, which claims the world as its authority.

> For "the lads" this hegemony of common sense surrounds them all the time. . . . It supplies naturalised social divisions and an omnipresent sexual chauvinism. Perhaps most important . . . it supplies an overpowering feeling that the way of the world is the way of work. Work of a certain direct and concrete kind. (Willis, 1977, p. 162)

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[7] When applied to these backgrounds in twentieth century America, the "cultural deprivation hypothesis" has been largely discredited (see Persell, 1977, pp. 75-84).

The naturalist view of the social world and of people's destinies within it implies that "there is no one to blame, no action to be taken" (p. 163). The pride of the lads, their hand-mindedness, and their stoicism amount to a gesture that is touching--and saddening, too, because it is self-defeating and predicated on an exploitative distinction based on sex.

In the late nineteenth and early twentieth centuries, advocates of manual training or vocational education in the U.S. saw firsthand experience as a means of insulating the "rank and file" (Sneeden, 1924) from undue aspirations. The trend toward social predestination was so strong that in 1908 Harvard president Charles W. Eliot reversed his earlier position and argued that "teachers of the elementary schools ought to sort the pupils by their evident or probable destinies." He added that "it is the very best thing that a teacher can do for a child, to tell him or her in what line he or she can have the most successful and the happiest life" (Eliot, 1908/1974, p. 137; also Krug, 1964).

One of the most influential documents in the history of vocational education in the U.S., the report of the Commission on National Aid to Vocational Education, put it this way in 1914:

> Vocational training will indirectly but positively affect the aims and methods of *general education:* (1) by developing a better teaching process through which the children who do not respond to book instruction alone may be reached and educated through *doing;* (2) by introducing into our educational system the aim of utility, to take its place in dignity by the side of culture and to connect education with life by making it purposeful and useful. Industrial and social unrest is due in large measure to a lack of a system of practical education fitting workers for their callings. (Lazerson & Grubb, 1974, p. 117; emphasis added)

Two of the most important advocates of this drive for a practical and purpose-

fully limited education were David Snedden[8] and Charles Allen Prosser. Prosser, a key person in the passage of the landmark Smith-Hughes Act of 1917, contended that vocational education should be based on the "actual experiences of people working in an occupation." Subjects such as mathematics or science should be organized in short units that apply directly to the "specific needs of workers in the performance of specific tasks or operations" (Wirth, 1974). In 1916, Snedden argued that industrial education in the schools should mean real work on real machines, turning out marketable products. Attempts to mix job-specific education and general education would turn the whole into a useless "hash." He predicted the replacement of the short, "soft" school day with a work day equal in length and conditions to a day of industrial labor (Rodgers, 1978).

Today, Snedden's (1924) tone is likely to offend, for example, when he writes that the multitude "can follow well--if trained thereto--in voting or in war [or] in working (p. 554). In general, he wanted schools to be effective mechanisms for social control (Wirth, 1972). The training for "following well" was to be supplied by vocational education.

The entailments of the analogical fusion of education and (firsthand) experience are played out here in the social arena. Educators saw learning by doing, for the world of art, as both the content and means of an

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[8]Snedden left a professorship at Teacher's College, Columbia University to become Commissioner of Education under Governor Douglas in Massachusetts. He was a prolific writer, and was listed by Normal Woelfel as one of the 17 American educators who were "Molders of the American Mind." (see Wirth, 1974). In 1913 Snedden criticized the importance of algebra in the curriculum. He saw it as important only for those few who would use it as a professional tool. He was likewise critical of Latin, physics, and history (Krug, 1964), and argued that abstract theory should be reduced to the minimum needed by workers (Rodgers, 1978).

education openly class-based and oriented toward political quietism.

The movement for vocational education has been reformed in the guise of career education. Career education stresses developing career awareness in advance of firsthand training for a specific career. Social predestination is not assumed. The progression from vocational schooling to career education thus permits a wider opening to the social world than simple firsthand experience. Nevertheless, critics of career education (e.g., Grubb & Lazerson, 1975; Wagner, 1980) maintain that it results in a lowering of aspirations and educational quality as well as an unquestioning commitment of young people to the social order.

Ironically, education that single-mindedly merges the immediate goals of the world of work with those of education reduces individual and social control over the future. In confounding things as they are with things as they will and must be, it closes avenues to conceptual and social change. Immediacy is also ahistorical. "The ideal of immediate experience denies the desire for reflection, tradition, and cumulative knowledge" (Shiff, 1980, p. 105). This desire distinguishes education from accidental learning; it is affirmed in the study of texts.

Freedom is Learned in Books

"Perhaps the immobility of the things that surround us is forced upon them by our conviction that they are themselves, and not anything else," reflects Proust (1928/1970), in Swann's Way "and by the immobility of our conceptions of them" (p. 5). Book learning at its best advances the mobility of our conceptions, and it expands the scope of thoughts and actions that can be envisioned. It is an "adventure in thought" that moves the self away

from its personal center, frees it from the necessities and entanglements of social existence, and creates an island in life.[9]

Is Reading to Be Preferred to Reflective Experience?

In thought, everything is possible. But the person who picks up a book here and there and reads without critical awareness is subject to many of the pitfalls of accidental firsthand experience. The world of words also involves the self and the emotions. And text has its own authority, not always well deserved.

Thus, reading can be mindless, and experience a basis for reflection. The limitations and fallacies of firsthand experience can partially be overcome if one plans experiences carefully, anticipates what they have to offer, and selects experiences that vary in some systematic fashion.

Even so, books have their advantages. Under any circumstances, firsthand experience is difficult to control. It involves natural and social facts and other people--amenable to thought, often intractable in life. The person who wants to choose experiences is more constrained by time, expense, qualifications, and other obstacles to access than someone who selects a book. The reader is free to be daring. An experimental attitude in reading is less risky than firsthand experience in even a mildly adventurous vein. Besides, possibilities of life are limited.

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[9]For a discussion of the concept of adventure, see Georg Simmel's (1959) brilliant essay. It analyzes adventure as a form of experiencing in which we "burn our bridges, and step into the mist, as if the road will lead us on, no matter what" (p. 249). Although Simmel's analysis applies to all manner of experience, we stress adventures in thought under conditions of mental discipline supplied, for example, by scholarship and other forms of mature reflection (see Oakshott, 1972; Scheffler, 1977). Adventures in life and thought without such constraints (as the fictional lives of Madame Bovary, Effi Briest, and the less well-known Julia Almond in F. Tennyson Jesse's [1934/1979] book show) can lead to no good.

How does it feel to be a medieval knight, a Flemish lace-maker, or a Mexican immigrant in Texas? Firsthand, these experiences cannot be checked out from a friendly librarian. But libraries hold historical records, works of fiction, and social theory that describe and analyze feudalism, lace-making, and immigration policies from many points of view. Books incorporate the experiences, thoughts, and feelings of people remote in time and place. Furthermore, the world of books is governed by standards of criticism--not unfailingly enforced, but agreed upon in a community of thought and tested by time (Fish, 1980).

In action, the critical faculties are in abeyance (Freidson, 1970). People who live by action alone may never ask what is happening. However, when one is not actually the person peering through a vizier, bent over lace-bobbins, or looking for a job in San Antonio, necessity is in abeyance. Book learning is less vulnerable than firsthand experience to potent subjective and objective constraints.[10]

In life, necessity and chance are often joined in ways not calculated to advance the goals of learning. Nor is the psychology of learning dependent upon the logic of action. As Bruner and Olson (1978) point out, "learning can occur when neither of the primary conditions for learning through contingent experience--self-initiated action or direct knowledge

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[10]In comparing schooling with on-the-job learning, Becker (1972) clarifies some of these objective constraints as follows: "Some of the things a novice ought to learn (or would like to learn) may occur infrequently during his period of training. A school would make some provision to cover this material, so that the student's competence would not depend on the accidents of history. . . . What one can learn on the job and who will teach it depend on contingencies unrelated to education or training. The learning situation exists to do some quite different job and is subject to the constraints emanating from the external world, any of which may interfere directly in the novice's training. Many of these interferences have nothing whatever to do with any attribute of the novice, neither his skill or aptitude, nor his aggressiveness and initiative. The defect is structural" (pp. 120-103).

of its results--is fulfilled" (p. 3). Psychologists have shown that knowledge can be acquired independently of practical action, by observing and imitating others and, more directly relevant to our argument, by extracting knowledge from vicarious experience coded in text (see Bruner & Olson [1978] for a review).

Knowledge That Comes Secondhand

Unlike firsthand experience, secondhand information (particularly in the form of pallid numerical data) lends itself to a consideration of what is typical, what is generalizable, and what can be found that is different from what is already known. It enlarges the number of cases that can be considered, can include rare occurrences of high value for learning, and represents more adequately than firsthand experience the distribution of events in the real world.

Secondhand information works against conceptual, temporal, and spatial parochialism and can protect people against inferences that are readily made, but unwarranted. It mitigates biases resulting from the personal and affective qualities of firsthand experience. Take, for instance, the "lads" and their naturalistic conception of the social world. For all its somber macho appeal, this world view can be faulted by facts as we know them. In 1844, Marx (1963) quoted the following figures on the composition of the English labor force:

> In the English cotton spinning mills only 158,818 men are employed as against 196,818 women. For every 100 male workers in the Lancashire cotton mills there are 103 women workers, and in Scotland 209 women for every 100 men. In the English flax factories in Leeds there were 147 women for every 100 male workers; in Dundee and on the East coast of Scotland, 280 women for every 100 men. (p. 80)

These figures should shake anyone's confident assumption of male superiority for factory work. If anything, work conditions at the height of

early industrial capitalism were harder than today, and the hours of work longer. However, these data do not settle the question, for we do not know that women's work equalled men's in terms of physical requirements, how mortality rates compared, what contribution to female mortality rates was made by child-bearing, and so on. In short, it's an empirical question.

It is probably true that scientists, as scientists, are well versed in the practice of appropriate inference. But, epistemologically speaking, laypersons and scientists are not so differently placed as long as all knowledge is considered as "indirect, presumptive, obliquely, and incompletely corroborated at best" (Campbell, 1975). Nisbett and Ross (1980) warn scientists (especially in their role of social advocates) as well as laypersons against the fallacy of misplaced certainty:

> An important step in reducing people's overconfidence would be taken by leading them to recognize that their interpretations of events, rather than being simple read-outs of data, are inferences that make heavy use of theory. Once one recognizes that the same data would look quite different, and could easily support different beliefs, if those data were viewed from the vantage point of alternative theories, the groundwork for a humbler epistemic stance has been laid. (p. 293)

Epistemic humility is related to one's capacity for epistemic surprise (Scheffler, 1977). Facts as we know them can come upon one unawares and surprisingly appear in a new light. Epistemological conventions do change. The resulting perplexity is not always pleasant. But it is less dull than a state of mind in which everything is what it is, and nothing else. On occasion, it is also less dismal.

Freedom from Firsthand Experience

For writers, a spade is hardly ever a spade. Fiction does not derive the possible from the real; it is a promise of wonder and astonish-

ment. Enjoyed in a spirit that recognizes artistic conventions--neither taken for reality, nor dismissed for lack of fit with facts--fiction allows us, in Frye's (1976) words, to "send out imaginative roots into that mysterious world between the 'is' and the 'is not' which is where. . . ultimate freedom lies" (p. 166).

Literature gives access to the life of the mind with its countless, but not arbitrary, variations of experience. There is no end to the imagination from which the written work springs and no limit to the thoughts and feelings with which the reader can respond. As a work of art, a book is a "path of transcendence." Sartre (1949) elaborates this in vivid terms:

> If the painter presents us with a field or a vase of flowers, his paintings are windows which are open on the whole world. We follow the red path which is buried among the wheat much farther than Van Gogh has painted it, among other wheat fields, under other clouds, to the river which empties into the sea . . . to the other end of the world. (p. 57)

Readers are invited to follow, but "following well" means to go beyond the letter. The reader responds in freedom to the free creation of another self. But freedom in reading and writing is not unruliness.

A plan of work can arise while the author is moved by passion, and the work put forth can be impassioned, but the decision to write and the act of writing presuppose, as Sartre (1949) put it, "that [the author] withdraws somewhat from his feelings, in that he has transformed his emotions into free emotions, as I do mine while reading him; that is, that he is in an attitude of generosity" (p. 53). Detachment is not the forfeit of passion, but an expression of the desire to see things clearly, truly, and also rightly. The leap of imagination is not the same as the inferential leap, but both honor the ideal of truth.

In writing, Chekhov (1889/1973) put a sense of personal freedom above talent, spontaneity, and an abundance of materials. In a letter to a friend he describes his awakening to this sense of freedom:

> Try and write a story about a young man--the son of a serf, a former grocer, choirboy, schoolboy, and university student, raised on respect for rank, kissing the priests' hands, worshipping the ideas of others, and giving thanks for every piece of bread, receiving frequent whippings, making the rounds as a tutor without galoshes, brawling, torturing animals, enjoying dinners at the house of rich relatives, needlessly hypocritical before God and man merely to acknowledge his own insignificance--write about how this young man squeezes the slave out of himself drop by drop and how, on waking up one fine morning, he finds that the blood coursing through his veins is no longer the blood of a slave, but that of a real human being. (p. 85)

This is Chekhov's story. The detachment and compassion of his work gives credence to Sartre's belief that literature evokes and displays freedom and generosity; and it lends life to Hegel's (1821/1952) statement about the ends of reason and education:

> The end of reason . . . is to banish natural simplicity, whether the passivity which is the absence of self, or the crude type of knowing and willing, i.e., immediacy and singularity, in which mind is absorbed . . . The final purpose of education . . . is liberation and the struggle for a higher liberation still. . . . In the individual subject, this liberation is the hard struggle against pure subjectivity of feeling and the caprice of inclination. (p. 125)

Objective knowledge and literature are contained together in what philosophers of science as well as literary critics have termed the third world. This is a realm of thought, equally removed from the physical world and the world of subjective experience. It comprises the contents of books, libraries, and computer memories. They are human products of objective standing. As Popper (1975) put it, "almost every book is like this: it contains objective knowledge, true or false, useful or useless; and whether anybody ever reads it and really grasps its content

is almost accidental" (p. 115). Ideas are autonomous and impersonal because they are distinct from the people who hold or debate them. Theories are, in the words of Polanyi (1962), "a kind of map extended over space and time;" and, "even a geographical map fully embodies in itself a set of strict rules for finding one's way through a region of otherwise uncharted experience" (p. 4).

Objective does not mean absolute. Scientific theories and artistic creations invite criticism (Popper 1975; Leavis, 1962). They draw on the descriptive and argumentative uses of language. Language has evolved as a social creation that contains all manner of assumptions about the world. Since these assumptions are easily mistaken for in-the-grain-of-nature realities, a crucial question is,

> to what extent is this socially constructed world the only world available to us? To what extent are we locked into it and to what extent are we free to go beyond it or contrary to it? To what degree does formal education make us more of a prisoner of that social world or on the other hand provide us with the means to achieve some measure of freedom to transcend it? (Soltis, 1981, p. 100)

The measure of education is the degree to which it allows all people access to the objective contents of thought, to theoretical systems, problems, and ideas with a range of implications not yet known (see Polanyi, 1962). The fact that common sense and experience are too little challenged in education (e.g., learning about uncertainty and the conceptual foundations of knowledge occurs primarily at its most advanced levels) raises a radical equity problem in the distribution of educational opportunities (see Buchmann, in press). Education that affirms the absolutism of common sense and of personal, untutored perception is a contradiction in terms. The analogical fusion of education and experience and its enactment in schools enshrine this contradiction. By definition, first-hand experience cannot overcome the paradox of finitude.

Reference Note

1. Brophy, J. Fostering student learning and motivation in the elementary school classroom (Occasional Paper No. 51). East Lansing, Michigan: Institute for Research on Teaching, Michigan State University, 1982.

References

Becker, H.S. A school is a lousy place to learn anything in. American Behavioral Scientist, 1972, 16(1), 85-105.

Bohm, D. Summary of a talk by J. Weizenbaum, Computer science and the need for a human-centered science. Teachers College Record, 1981, 82, 521-522.

Bourdieu, P. Systems of education and systems of thought. In M.F.D. Young (Ed.), Knowledge and control. London: Collier-Macmillan 1971.

Bruner, J.S., & Olson, R. Symbols and texts as tools of intellect. Interchange, 1978, 8(4), 1-15.

Buchmann, M. The priority of knowledge and understanding in teaching. In L. Katz & J. Raths (Eds.), Advances in teacher education. Norwood, New Jersey: Ablex Publishing Corp., in press.

Campbell, D.T. On the conflicts between biological and social evolution and between psychology and moral tradition. American Psycholgist, 1975, 30(12), 1103-1126.

Campbell, D.T. Experiments as arguments. Knowledge: Creation, Diffusion, Utilization, 1982, 3(3), 327-338.

Chekhov, A. In L. Karlinsky (Ed. & Trans.) with M.H. Heim (Trans.), Life and thought: Selected letters and commentary. Berkeley, California: University of California Press, 1973. (Originally published, 1889)

Clifford, G.J. The shape of American education. Englewood Cliffs, New Jersey: Prentice-Hall, 1975.

Duckworth, E. Either we're too early and they can't learn it or we're too late and they know it already: The dilemma of "applying Piaget." Harvard Educational Review, 1979, 49(3), 297-312.

Eisele, C. Defining education: A problem for educational history. Educational Theory, 1980, 30(1), 25-33.

Eliot, C. Equality of educational opportunity. In M. Lazerson & W. Grubb (Eds.), American education and vocationalism: A documentary history 1870-1970. New York: Teachers College Press, 1974. (Originally published, 1908)

Fish, S. Is there a text in this class? The authority of interpretive communities. Cambridge: Harvard University Press, 1980.

Freidson, E. Profession of medicine: A study of the sociology of applied knowledge. New York: Harper & Row, 1970.

Frye, N. The secular scripture: A study of the structure of romance. Cambridge: Harvard University Press, 1976.

Geertz, C. Common sense as a cultural system. The Antioch Review, 1975, 331), 5-26.

Grubb, W., & Lazerson, M. Rally 'round the workplace: Continuities and fallacies in career education. Harvard Educational Review, 1975, 45, 451-474.

Hegel, G.W.F. Philosophy of right (Trans. by T.M. Knox). London: Oxford University Press, 1952. (Originally published, 1821)

Inhelder, B., & Piaget, J. The growth of logical thinking: From childhood to adolescence. New York: Basic Books, 1958.

Jesse, F.T. A pin to see the peepshow. London: Virago Publishing Co., 1979. (Originally published, 1934)

Krug, E.A. The shaping of the American high school. New York: Harper & Row, 1964.

Lakoff, G., & Johnson, M. Conceptual metaphor in everyday language. The Journal of Philosophy, 1980, 77(8), 453-486.

Lazerson, M., & Grubb, W. (Eds.). American education and vocationalism: A documentary history 1870-1970. New York: Teachers College Press, 1974. (Originally published, 1908)

Leavis, F.R. Two cultures? The significance of C.P. Snow. London: Chatto & Windus, 1962.

Lipsky, M. Street-level bureaucracy. New York: Russell Sage Foundation, 1980.

Lortie, D. Schoolteacher. Chicago: University of Chicago Press, 1975.

Marx, K. Early writings (Trans. and Ed. by T.B. Bottomore). New York: McGraw-Hill, 1963. (Originally published, 1844)

Marx, K. The eighteenth brumaire of Louis Bonaparte. New York: International Publishers, 1967. (Originally published, 1869)

Mill, J.S. A system of logic. New York: Longman, Green & Co., 1941. (Originally published, 1843)

Nisbett, R., & Ross, L. Human inference: Strategies and shortcomings of social judgment. Englewood Cliffs, New York: Prentice-Hall, 1980.

Oakeshott, M. Education: The engagement and its frustration. In R.F. Dearden, P.H. Hirst, & R.S. Peters (Eds.), Education and the development of reason. London: Routledge & Kegan Paul, 1972.

Perelman, Ch., & Olbrechts-Tyteca, L. The new rhetoric: A treatise on argumentation. Notre Dame, Indiana: University of Notre Dame Press, 1971.

Persell, C.H. Education and inequality: The roots and results of stratification in America's schools. New York: The Free Press, 1977.

Platt, J. Social traps. American Psychologist, 1973, 641-651.

Polanyi, M. Personal knowledge: Towards a post-critical philosophy. Chicago: University of Chicago Press, 1962.

Popper, K.P. Objective knowledge: An evolutionary approach. Oxford: At the Clarendon Press, 1975.

Proust, M. Swann's way (Trans. by G.K. Scott Moncrief). New York: Vintage Books, Random House, 1970. (Originally published, 1928)

Rodgers, D.T. The work ethic in industrial America 1850-1920. Chicago: University of Chicago Press, 1978.

Sartre, J.P. What is literature? New York: Philosophical Library, 1949.

Scheffler, I. The language of education. Springfield, Illinois: Charles E. Thomas, 1960.

Scheffler, I. In praise of cognitive emotions. Teachers College Record, 1977, 79(2), 167-185.

Scheffler, I. Beyond the letter: A philosophical inquiry into ambiguity, vagueness, and metaphor in language. London: Routledge & Kegan Paul, 1979.

Schwab, J. The "impossible" role of the teacher in progressive education. The School Review, 1959, 62(2), 139-159.

Shiff, R. Art and life: A metaphoric relationship. In S. Sacks (Ed.), On metaphor. Chicago: University of Chicago Press, 1980.

Simmel, G. The adventure. In K.H. Wolff (Ed.), Georg Simmel, 1858-1918: A collection of essays, with translations and bibliography. Columbus, Ohio: Ohio State University Press, 1959.

Simon, H.A., & Newell, A. Models: Their uses and limitations. In L.D. White (Ed.), The state of the social sciences. Chicago: University of Chicago Press, 1956.

Snedden, D. Education for a world of team-players and team workers. School and Society, 1924, 20, 552-557.

Soltis, J.F. Education and the concept of knowledge. In Philosophy and education: 80th yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1981.

Tversky, A., & Kahneman, D. Availability: A heuristic of judging frequency and probability. Cognitive Psychology, 1973, 5 207-232.

Tversky, A., & Kahneman, D. Judgment under uncertainty: Heuristic and biases. Science, 1974, 185, 1124-1131.

Vandenberg, D. Education or experience? Educational Theory, 1980, 30(2), 235-251.

Wagner, K. Ideology and career education. Educational Theory, 1980, 30(2), 105-113.

Waller, W. The sociology of teaching. New York: Russell & Russell, 1961. (Originally published, 1932)

Whitehead, A.N. Adventures of ideas. New York: Macmillan Co., 1933.

Willis, P.E. Learning to labour. Westmead, England: Saxon House, 1977.

Wirth, A.G. Education in the technological society: The vocational-liberal studies controversy in the early twentieth century. Scranton, Pennsylvania: Intext Educational Publishers, 1972.

Wirth, A.G. Philosophical issues in the vocational-liberal studies controversy (1900-1917): John Dewey vs. the social efficiency philosophers. Studies in Philosophy and Education, 1974, 8(3), 169-182.